EOSDIS Contribution to USGCRP

Highlights

EOSDIS supports the USGCRP objectives by providing data collection, processing, and distribution of Earth science data to scientists and researchers world wide.

The U.S. Global Change Research Program (USGCRP) was organized in 1989 and created by the Global Change Research Act of 1990. The USGCRP provides a framework for Earth system science research by NASA, the National Oceanic and Atmospheric Administration (NOAA), the U.S. Geological Survey (USGS), the Department of Defense (DoD), the Environmental Protection Agency (EPA), and other federal agencies. The mission of the USGCRP is to provide a better understanding of natural and human-induced changes in the Earth's environment, as well as potential adaptation and mitigation strategies. Changes in the global environment, including ozone depletion, climate change and greenhouse warming, natural variations in the climate, and land use change, have the potential for inducing significant effects on human society and the Earth's natural ecosystems. Through NASA's participation in the program, the Earth Observing System Data and Information System (EOSDIS) provide support for data collection, processing, and distribution to scientists and researchers world wide.

The specific objectives of the U.S. Global Change Research Program are to:

- Observe and document changes in the Earth system;
- Understand why these changes are occurring;
- Improve predictions of future global change;
- Analyze the environmental, socio-economic, and health consequences of global change; and,
- Support state-of-the-science assessments of global environmental change issues.

In response to the development of scientific understanding and research capabilities, the USGCRP is focusing research efforts on four areas of Earth system science:

- Seasonal to Interannual Climate Variability, with the goal of obtaining a predictive understanding and the skills to produce forecasts of short-term climate fluctuations and to apply these predictions to problems of social and economic development in the United States and abroad.
- Climate Change Over Decades to Centuries, with the goal of understanding, predicting, and assessing changes in the climate and the global environment that will result from the influences of projected changes in population, energy use, land cover, and other natural and human-induced factors, and providing the scientific information needed to address these changes.
- Changes in Ozone, UV Radiation, and Atmospheric Chemistry, with the goal of understanding and characterizing the chemical changes in the global atmosphere and their consequences for human well-being.
- Changes in Land Cover and in Terrestrial and Aquatic Ecosystems, with the goal of providing a stronger scientific basis for understanding, predicting, assessing, and responding to the causes and consequences of changes in terrestrial and aquatic ecosystems resulting from human-induced and natural influences.

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EOSDIS Contribution to USGCRP (cont.)

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The goals of NASA's Earth Science Enterprise (ESE) program are firmly rooted within the USGCRP objectives. The vantage point of space provides information that is not obtainable in any other way about the Earth's land, atmosphere, ice, oceans, and biosphere, as well as the impact of humans on the Earth system. Remote sensing has the potential to improve crop and forest yield predictions, seasonal and interannual climate forecasts, urban planning, mineral exploration, and many other activities of socio-economic importance. Along with the global change research community, the ESE program is utilizing satellite technology to lead the development of knowledge required to support the complex national and international policy decisions that lie ahead.

The USGCRP, through its scientists, scientific research institutions, and Federal agencies, strongly supports and participates in international efforts that bring research scientists and their institutions and programs together in internationally coordinated research programs through multilateral organizations and bilateral arrangements. These coordinated efforts encourage scientists, scientific and financial resources, and management support to combine resources to achieve the objectives of global change research and assessment.

The international coordination efforts developed by the research community to address scientific questions related to global change include:

- Earth Observations International Coordination Working Group (EO-ICWG): The ICWG provides a forum for coordination, planning, and discussion among the US, Japan, Europe, and Canada. The members come together periodically from representative space agencies to discuss policy and technical issues.
- World Climate Research Programme (WCRP): The WCRP, jointly sponsored by the International Council of Scientific Unions (ICSU) and the World Meteorological Organization (WMO), seeks to lay the scientific foundation for predicting the response of the Earth's climate to natural and human influences.
- International Geosphere-Biosphere Programme (IGBP): The ICSU-sponsored IGBP focus is on acquiring basic scientific knowledge about the interactive processes of biology and chemistry of the Earth as they relate to global change. Priority is given to research on key interactions and significant changes on time scales of decades to centuries that most affect the biosphere, that are most susceptible to human perturbations, and that will most likely lead to a practical, predictive capability.
- International Human Dimensions Programme (IHDP): The IHDP was initiated under the International Social Science Council (ISSC), and ICSU has recently become a co-sponsor.

These programs and a wide range of bilateral and multilateral research activities have identified many of the key scientific problems that need to be addressed on the global scale. Also, they have developed the scientific rationale and plans to resolve these questions and provide an international framework within which national research programs such as the USGCRP can both address national research objectives as well as work with other nations to gain knowledge from coordinated programs seeking to resolve global- and regional-scale scientific questions.

U.S. Global Change Research Program

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